PB-239 700

# GLEN LAKE, HILLSBOROUGH COUNTY, NEW HAMPSHIRE

Pacific Northwest Environmental Research Laboratory

Prepared for:

New Hampshire National Guard
New Hampshire Water Supply and Pollution Control Commission
National Environmental Research Center

August 1974

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivded according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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# REPORT
# ON
# GLEN LAKE
# HILLSBOROUGH COUNTY
# NEW HAMPSHIRE
# EPA REGION I
# WORKING PAPER NO. 12

WITH THE COOPERATION OF THE
NEW HAMPSHIRE WATER SUPPLY & POLLUTION CONTROL COMMISSION
AND THE
NEW HAMPSHIRE NATIONAL GUARD

AUGUST, 1974

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# FOREWORD

The National Eutrophication Survey was initiated in 1972 as a research project in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

## OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

## ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

## LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the New Hampshire Water Supply and Pollution Control Division for professional involvement and to the New Hampshire National Guard for conduct of the tributary sampling phase of the Survey.

William A. Healy, Executive Director of the New Hampshire Water Supply and Pollution Control Commission, Ronald E. Towne, Water Pollution Biologist, and Kenneth MacDonald, Chief Water Pollution Sanitarian, provided invaluable lake documentation and counsel during the course of the Survey.

Major General Francis B. McSwiney, the Adjutant General of New Hampshire, and Project Officer Lieutenant Colonel Russ Grady, who directed the volunteer efforts of the New Hampshire National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

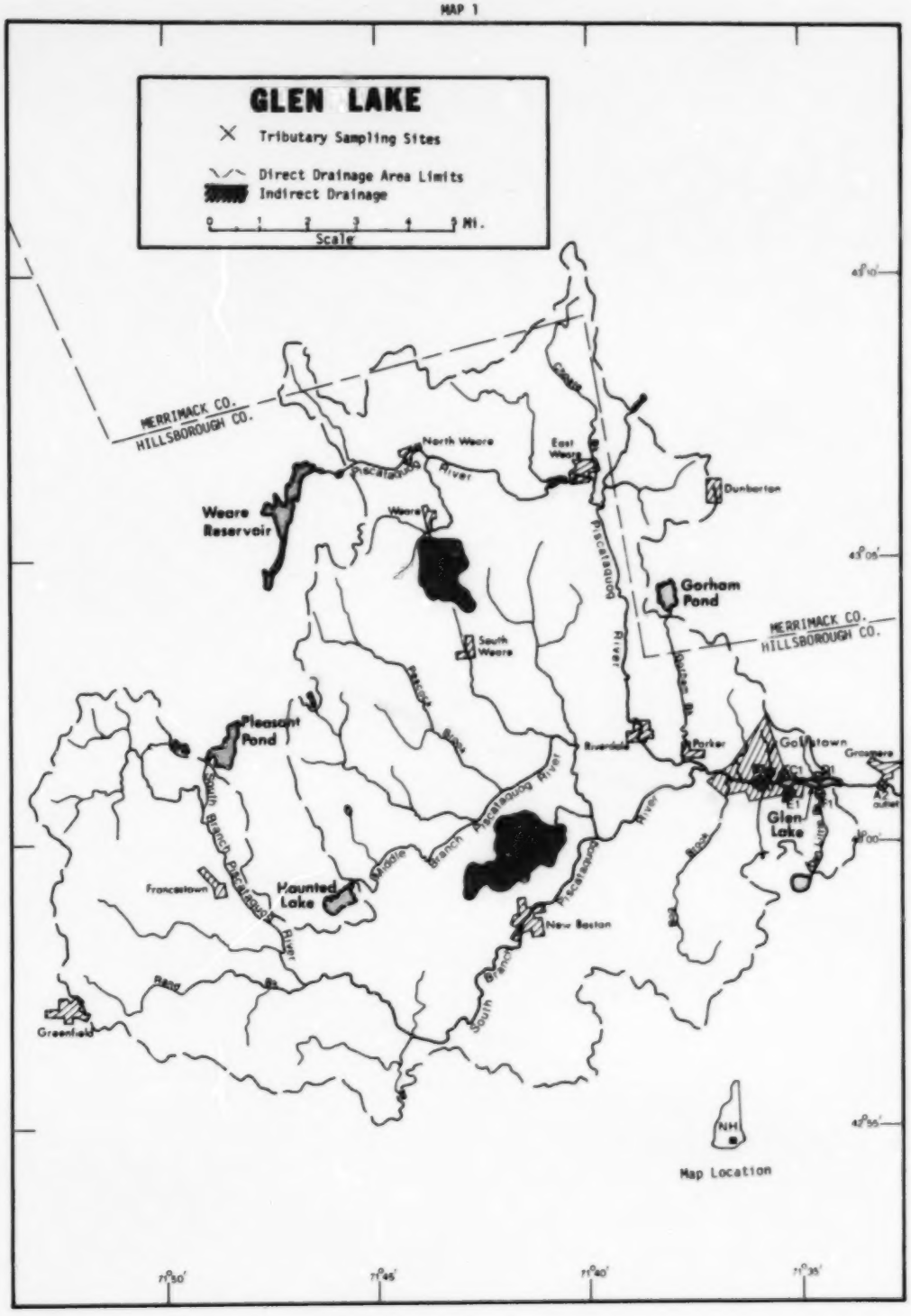
NATIONAL EUTROPHICATION SURVEY

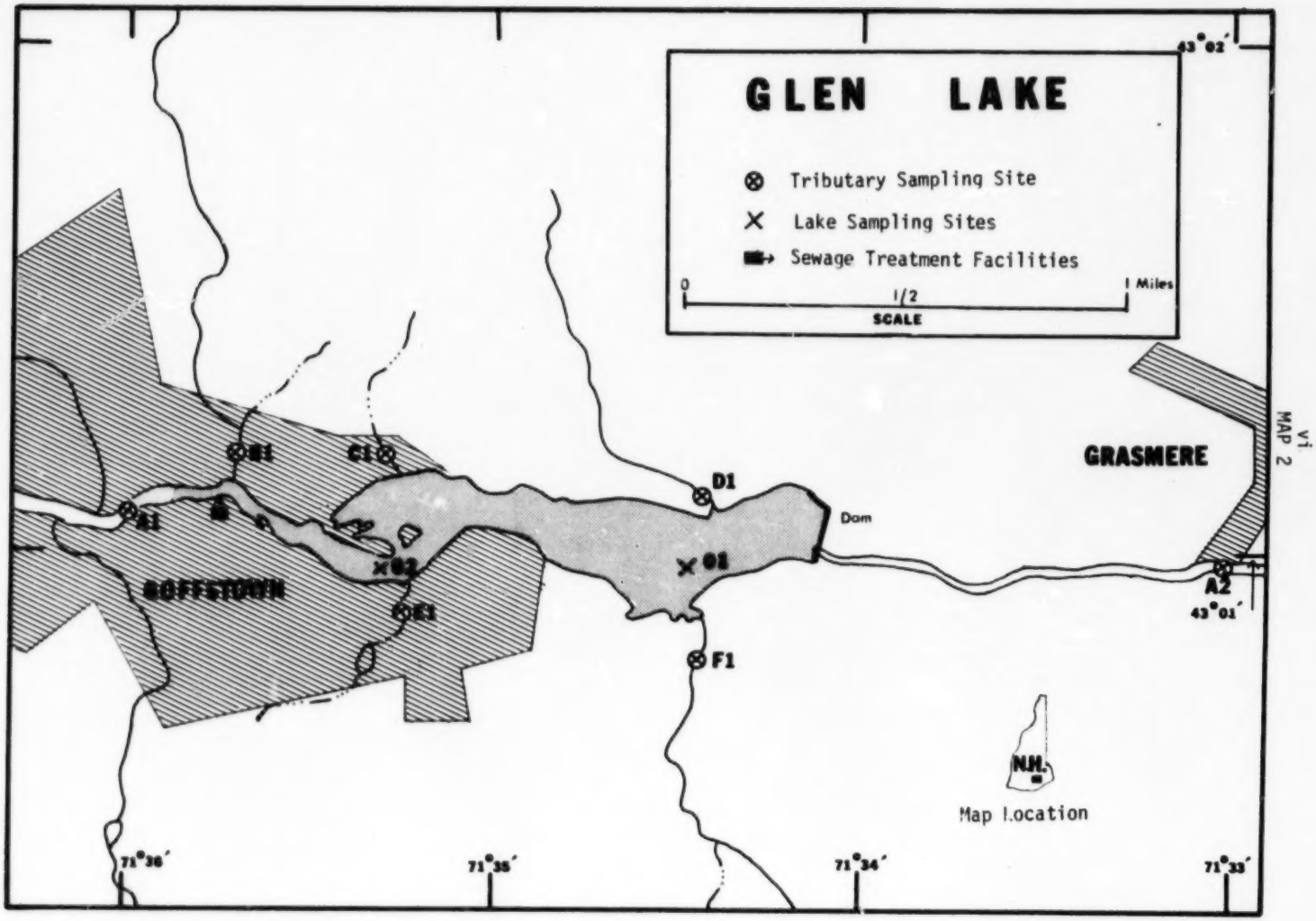
STUDY LAKES

STATE OF NEW HAMPSHIRE

| LAKE NAME | COUNTY |
|---|---|
| Glen Lake | Hillsborough |
| Lake Winnipesaukee | Carroll, Belknap |
| Kelly's Falls Pond | Hillsborough |
| Powder Mill Pond | Hillsborough |

MAP 1


GLEN LAKE
Tributary Sampling Sites
Direct Drainage Area Limits
Indirect Drainage
0 1 2 3 4 5 Mi.
Scale
MERRIMACK CO.
HILLSBOROUGH CO.
North Weare
East Weare
Weare Reservoir
Weare
Dunbarton
Gorham Pond
South Weare
Pleasant Pond
Goffstown
Grasmere
Glen Lake
Francestown
Mounted Lake
New Boston
Greenfield
NH
Map Location
71°30'
71°25'
71°20'
71°15'
42°55'
43°00'
43°05'
43°10'


GLEN LAKE
Tributary Sampling Site
Lake Sampling Sites
Sewage Treatment Facilities
0
1/2
1 Miles
SCALE
43°02'
GRASMERE
MAP 2
B1
C1
D1
A1
Dam
B2
O1
A2
43°01'
BOFFSTOWN
E1
F1
N.H.
Map Location
71°36'
71°35'
71°34'
71°33'

GLEN LAKE

STORET NO. 3306

# I. CONCLUSIONS

## A. Trophic Condition:

Survey data and the records of others show that Glen Lake is eutrophic. The lake exhibited oxygen depletion in the hypolimnion, had moderately high mean nutrient concentrations, and had only fair Secchi disc transparency during the Survey sampling periods. Historically, the lake has supported nuisance blooms of blue-green algae.

## B. Rate-Limiting Nutrient:

The algal assay results indicate that Glen Lake was phosphorus limited at the time the assay sample was collected. However, the lake data show that at times Glen Lake may be only narrowly phosphorus limited or even nitrogen limited.

## C. Nutrient Controllability:

1. Point sources--During the sampling year, Glen Lake received a total phosphorus load at a rate more than three times that proposed by Vollenweider (in press) as "dangerous" (i.e., a eutrophic rate; see page 14). Of this load, it is calculated that the community of Goffstown contributed about 50%.

It is noted in "Merrimack River Basin Water Quality Management Plan" (Anonymous, 1973), that Phase I of the New Hampshire State Plan calls for a regional waste treatment plant at Manchester

with an interceptor from the plant to Goffstown which will eliminate the discharge to Glen Lake. It is calculated that when the regional facilities become operational, the total phosphorus load to the lake will be reduced to about 58 lbs/acre/yr (6.5 $g/m^2/yr$).

The reduced rate will still be somewhat in excess of a eutrophic rate but should result in a persistent phosphorus limitation in the lake and a significant reduction in the incidence and severity of nuisance algal blooms.

2. Non-point sources--During the sampling year, the mean phosphorus exports of the streams tributary to Glen Lake (see page 14) compared favorably with Lake Winnipesaukee tributaries (see Working Paper No. 11, "Report on Lake Winnipesaukee") in which the mean export was 65 $lbs/mi^2/yr$ and the range was from 27 to 148 $lbs/mi^2/yr$.

The rather low phosphorus export of the Piscataquog River (43 $lbs/mi^2/yr$) indicates that if there are point sources in the drainage, they are relatively minor ones. Note, however, that the drainage area/lake area ratio of this river is 835/1, and this accounts for the drainage contribution of over 47% of the total phosphorus load reaching Glen Lake during the sampling year.

## II. INTRODUCTION

Glen Lake is a relatively small impoundment of the Piscataquog River at Goffstown (see Map 1, page v). The watershed is primarily rolling hills, and the vegatative cover is mainly mixed soft- and hardwood forests.

Shoal areas in the lake are reported as limited, and aquatic weeds are said to be scant. However, algal blooms of nuisance proportions have occurred, and copper sulfate has been used for control.

A variety of fish are present, but fishing is reported to be poor (Anonymous, 1970).

Glen Lake is classified as a eutrophic water body (Anonymous, 1973), and water quality is said to have changed little during the past decade.

## III. LAKE AND DRAINAGE BASIN CHARACTERISTICS

### A. Lake Morphometry*:

1. Surface area: 151 acres.
2. Mean depth: 11 feet.
3. Maximum depth: 55 feet.
4. Volume: 1,661 acre/feet.
5. Mean hydraulic retention time: 3 days.

### B. Tributary and Outlet:
(See Appendix A for flow data)

1. Tributaries -

| Name | Drainage area** | Mean flow** |
|---|---|---|
| Piscataquog River | 197.0 $mi^2$ | 284.8 cfs |
| Unnamed Stream (B-1) | 0.6 $mi^2$ | 0.8 cfs |
| Unnamed Stream (C-1) | 0.1 $mi^2$ | 0.2 cfs |
| Unnamed Stream (D-1) | 0.2 $mi^2$ | 0.3 cfs |
| Unnamed Stream (E-1) | 0.2 $mi^2$ | 0.4 cfs |
| Dan Little Brook | 1.5 $mi^2$ | 1.9 cfs |
| Minor tributaries & immediate drainage - | 2.2 $mi^2$ | 3.3 cfs |
| Totals | 201.8 $mi^2$ | 291.7 cfs |

2. Outlet -

| | | |
|---|---|---|
| Piscataquog River*** | 202.0 $mi^2$ | 291.7 cfs |

### C. Precipitation†:

1. Year of sampling: 45.4 inches.
2. Mean annual: 40.3 inches.

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* Area planimetered on U.S.G.S. 7½' topo map; mean depth by random-dot method.
** Drainage areas are accurate within ±1%, gaged mean annual flows within ±15%, and ungaged mean annual flows within ±20%.
*** Includes area of lake; outflow adjusted to equal sum of inflows.
† See Working Paper No. 1, "Survey Methods".

## IV. LAKE WATER QUALITY SUMMARY

Glen Lake was sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from two stations on the lake and from a number of depths at each station (see Map 2, page vi). During each visit, a single depth-integrated (15 feet or near bottom to surface) sample was compo.ited from the stations for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 55 feet at station 1 and 9 feet at station 2.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lake was essentially well-mixed, are summarized below. Note, however, the Secchi disc summary is based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

A. Physical and chemical characteristics:

| Parameter | Minimum | FALL VALUES (10/04/72) Mean | Median | Maximum |
|---|---|---|---|---|
| Temperature (Cent.) | 9.9 | 14.3 | 15.3 | 16.6 |
| Dissolved oxygen (mg/l) | 0.0 | 5.0 | 6.6 | 7.8 |
| Conductivity (μmhos) | 80 | 84 | 83 | 97 |
| pH (units) | 6.2 | 6.6 | 6.6 | 6.8 |
| Alkalinity (mg/l) | 10 | 10 | 10 | 12 |
| Total P (mg/l) | 0.023 | 0.048 | 0.040 | 0.105 |
| Dissolved P (mg/l) | 0.012 | 0.031 | 0.019 | 0.077 |
| $NO_2$ + $NO_3$ (mg/l) | 0.030 | 0.050 | 0.050 | 0.070 |
| Ammonia (mg/l) | 0.260 | 0.546 | 0.275 | 2.340 |
| | | ALL VALUES | | |
| Secchi disc (inches) | 46 | 66 | 63 | 87 |

B. Biological characteristics:

1. Phytoplankton -

| Sampling Date | Dominant Genera | Number per ml |
|---|---|---|
| 06/02/72 | 1. Fragilaria | 211 |
| | 2. Dinobryon | 132 |
| | 3. Synedra | 128 |
| | 4. Navicula | 94 |
| | 5. Nitzschia | 38 |
| | Other genera | 199 |
| | Total | 802 |
| 08/05/72 | 1. Fragilaria | 17,658 |
| | 2. Dinobryon | 6,577 |
| | 3. Oocystis | 2,973 |
| | 4. Synedra | 450 |
| | 5. Gloeocapsa | 270 |
| | Other genera | 360 |
| | Total | 28,288 |
| 10/04/72 | 1. Flagellates | 1,491 |
| | 2. Melosira | 843 |
| | 3. Micractinium | 271 |
| | 4. Dinobryon | 256 |
| | 5. Tabellaria | 226 |
| | Other genera | 1,250 |
| | Total | 4,337 |

2. Chlorophyll a -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by plus or minus 20 percent.)

| Sampling Date | Station Number | Chlorophyll a (µg/l) |
|---|---|---|
| 06/02/72 | 01 | 2.5 |
| | 02 | 3.1 |
| 08/05/72 | 01 | 0.4 |
| | 02 | 2.0 |
| 10/04/72 | 01 | 6.4 |
| | 02 | 8.3 |

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

| Spike (mg/l) | Ortho P Conc. (mg/l) | Inorganic N Conc. (mg/l) | Maximum yield (mg/l-dry wt.) |
|---|---|---|---|
| Control | 0.017 | 0.225 | 0.6 |
| 0.006 P | 0.023 | 0.225 | 3.1 |
| 0.012 P | 0.029 | 0.225 | 4.2 |
| 0.024 P | 0.041 | 0.225 | 5.6 |
| 0.060 P | 0.077 | 0.225 | 6.1 |
| 0.060 P + 10.0 N | 0.077 | 10.225 | 33.9 |
| 10.0 N | 0.017 | 10.225 | 0.5 |

2. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that Glen Lake had a moderate level of potential primary productivity at the time the sample was collected. Also, the increased yields with increased levels of orthophosphorus show that the lake was phosphorus limited

at that time (note that the addition of only nitrogen resulted in a yield not significantly different from the control yield). However, the lake data indicate that Glen Lake at times may be only narrowly phosphorus limited, as in the epilimnion at station 1 in June, or even nitrogen limited, as at station 2 in June where nitrogen to phosphorus ratios were less than 10 to 1 (i.e., nitrogen limitation would be expected).

It is likely that any appreciable reduction in phosphorus loading to Glen Lake would result in a persistent phosphorus limitation.

D. Trophic Condition:

Historically, periodic nuisance blooms of blue-green algae have occurred in Glen Lake and have resulted in efforts to control the growths with copper sulfate. Reportedly, the most recent treatment was in August, 1974 (MacDonald, 1974).

During the sampling year, the lake was characterized by marked depression of dissolved oxygen in the hypolimnion, moderately high nutrient levels, and only fair Secchi disc transparencies. Survey limnologists reported an algal bloom in progress during the August sampling visit.

While Glen Lake is clearly eutrophic, only the very short hydraulic retention time is suppressing the effects of very high nutrient loading rates and preventing an extreme degree of eutrophication.

## V. NUTRIENT LOADINGS
(See Appendix C for data)

For the determination of nutrient loadings, the New Hampshire National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on map 1 (page v), except for the high runoff months of March and April, when two samples were collected at several stations, and when ice cover or lack of flow prevented sampling. Sampling was begun in August, 1972 and was completed in August, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the New England District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were calculated using mean concentrations and mean annual flows. Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the means of the nutrient loads, in $lbs/mi^2/year$, at stations B-1, C-1, D-1, E-1, and F-1 and multiplying the means by the ZZ area in $mi^2$.

The operator of the Goffstown wastewater treatment plant provided monthly effluent samples and corresponding flow data.

A. Waste Sources:

1. Known municipal -

| Name | Pop. Served* | Treatment | Mean Flow (mgd) | Receiving Water |
|---|---|---|---|---|
| Goffstown | 4,000 | Imhoff | 0.410 | Glen Lake |

2. Known industrial - None

* Estimated; see Working Paper No. 1, "Survey Methods".

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

| Source | lbs P/ yr | % of total |
|---|---|---|
| a. Tributaries (non-point load) - | | |
| Piscataquog River | 8,410 | 47.5 |
| Unnamed Stream (B-1) | 50 | 0.3 |
| Unnamed Stream (C-1) | 10 | <0.1 |
| Unnamed Stream (D-1) | 10 | <0.1 |
| Unnamed Stream (E-1) | 20 | 0.1 |
| Dan Little Brook | 50 | 0.3 |
| b. Minor tributaries & immediate drainage (non-point load) - | 160 | 0.9 |
| c. Known municipal STP's - | | |
| Goffstown | 8,890 | 50.3 |
| d. Septic tanks* - | 80 | 0.5 |
| e. Known industrial - None | - | - |
| f. Direct precipitation** - | 10 | <0.1 |
| Total | 17,690 | 100.0 |

2. Outputs -

Lake outlet - Piscataquog River 12,060

3. Net annual P accumulation - 5,630 pounds

* Estimated 125 shoreline dwellings; see Working Paper No. 1, "Survey Methods".
** Estimated, see Working Paper No. 1.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

| Source | lbs N/ yr | % of total |
|---|---|---|
| a. Tributaries (non-point load) - | | |
| Piscataquog River | 318,460 | 89.9 |
| Unnamed Stream (B-1) | 1,140 | 0.3 |
| Unnamed Stream (C-1) | 120 | <0.1 |
| Unnamed Stream (D-1) | 220 | <0.1 |
| Unnamed Stream (E-1) | 390 | 0.1 |
| Dan Little Brook | 1,510 | 0.4 |
| b. Minor tributaries & immediate drainage (non-point load) - | 3,150 | 0.9 |
| d. Known municipal STP's - | | |
| Goffstown | 25,680 | 7.2 |
| d. Septic tanks* - | 2,940 | 0.8 |
| e. Known industrial - None | - | - |
| f. Direct precipitation** - | 720 | 0.2 |
| Total | 354,330 | 100.0 |

2. Outputs -

Lake outlet - Piscataquog River 254,390

3. Net annual N accumulation - 99,940 pounds

* Estimated 125 shoreline dwellings; see Working Paper No. 1, "Survey Methods".
** Estimated; see Working Paper No. 1.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

| Tributary | lbs P/mi$^2$/yr | lbs N/mi$^2$/yr |
|---|---|---|
| Piscataquog River | 43 | 2,109 |
| Unnamed Stream (B-1) | 83 | 1,900 |
| Unnamed Stream (C-1) | 100 | 1,200 |
| Unnamed Stream (D-1) | 50 | 1,100 |
| Unnamed Stream (E-1) | 100 | 1,950 |
| Dan Little Brook | 33 | 1,007 |

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving waters would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

| | Total Phosphorus | | Total Nitrogen | |
|---|---|---|---|---|
| Units | Total | Accumulated | Total | Accumulated |
| lbs/acre/yr | 117.2 | 37.3 | 2,346.6 | 661.9 |
| grams/m$^2$/yr | 13.13 | 4.18 | 263.0 | 74.2 |

Vollenweider loading rates for phosphorus (g/m$^2$/yr) based on mean depth and mean hydraulic retention time of Glen Lake:

| | |
|---|---|
| "Dangerous" (eutrophic rate) | 4.00 |
| "Permissible" (oligotrophic rate) | 2.00 |

## VI. LITERATURE REVIEWED

Anonymous, 1970. Biological survey of the lakes and ponds in Cheshire, Hillsborough, and Rockingham counties. NH Fish & Game Dept., Concord.

Anonymous, 1973. Merrimack River basin water quality management plan. Staff Rept. #61, NH Water Supply & Pollution Control Comm., Concord.

MacDonald, Kenneth, 1973. Personal communication (characteristics, uses, and trophic state of Glen Lake). NH Water Supply & Pollution Control Comm., Concord.

_____, 1974. Personal communication (algae control in Glen Lake, 1974). NH Water Supply & Pollution Control Comm., Concord.

Vollenweider, Richard A., (in press). Input-output models. Schweiz A. Hydrol.

# VII. APPENDICES

## APPENDIX A

## TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR NEW HAMPSHIRE 7/9/74

LAKE CODE 3306 HLEN LAKE

TOTAL DRAINAGE AREA OF LAKE 202.00

| TRIBUTARY | SUB-DRAINAGE AREA | NORMALIZED FLOWS JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | MEAN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3306A1 | 197.00 | 262.00 | 240.00 | 558.00 | 863.00 | 410.00 | 215.00 | 81.40 | 53.60 | 77.60 | 102.00 | 260.00 | 264.00 | 284.85 |
| 3306A2 | 202.00 | 269.00 | 247.00 | 572.00 | 885.00 | 420.00 | 220.00 | 83.40 | 54.90 | 79.60 | 105.00 | 267.00 | 271.00 | 292.10 |
| 3306B1 | 0.59 | 0.79 | 0.84 | 1.67 | 2.58 | 1.23 | 0.64 | 0.24 | 0.16 | 0.23 | 0.31 | 0.78 | 0.79 | 0.85 |
| 3306C1 | 0.14 | 0.19 | 0.20 | 0.40 | 0.61 | 0.29 | 0.15 | 0.06 | 0.04 | 0.05 | 0.07 | 0.19 | 0.19 | 0.20 |
| 3306D1 | 0.23 | 0.31 | 0.33 | 0.65 | 1.01 | 0.48 | 0.25 | 0.10 | 0.06 | 0.09 | 0.12 | 0.30 | 0.31 | 0.33 |
| 3306E1 | 0.24 | 0.32 | 0.34 | 0.68 | 1.05 | 0.50 | 0.26 | 0.10 | 0.06 | 0.10 | 0.13 | 0.32 | 0.32 | 0.35 |
| 3306F1 | 1.54 | 2.05 | 2.19 | 4.36 | 6.75 | 3.20 | 1.68 | 0.64 | 0.42 | 0.61 | 0.80 | 0.20 | 0.21 | 1.92 |
| 3306Z2 | 2.26 | 3.00 | 3.21 | 6.40 | 9.90 | 4.70 | 2.46 | 0.93 | 0.62 | 0.89 | 1.18 | 2.98 | 3.03 | 3.27 |

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 202.00
SUM OF SUB-DRAINAGE AREAS = 202.00

TOTAL FLOW IN = 3509.86
TOTAL FLOW OUT = 3513.90

MEAN MONTHLY FLOWS AND DAILY FLOWS

| TRIBUTARY | MONTH | YEAR | MEAN FLOW | DAY | FLOW | DAY | FLOW | DAY | FLOW |
|---|---|---|---|---|---|---|---|---|---|
| 3306A1 | 8 | 72 | 43.40 | 26 | 307.00 | | | | |
| | 9 | 72 | 30.30 | 24 | 25.60 | | | | |
| | 10 | 72 | 71.40 | 28 | 122.00 | | | | |
| | 11 | 72 | 452.00 | 18 | 221.00 | | | | |
| | 12 | 72 | 449.00 | 9 | 798.00 | | | | |
| | 1 | 73 | 524.30 | 27 | 601.00 | | | | |
| | 2 | 73 | 560.00 | | | | | | |
| | 3 | 73 | 949.00 | 24 | 967.00 | | | | |
| | 4 | 73 | 1061.00 | 14 | 746.00 | 28 | 1054.00 | | |
| | 5 | 73 | 586.00 | 19 | 601.00 | | | | |
| | 6 | 73 | 264.00 | 23 | 136.00 | | | | |
| | 7 | 73 | 339.00 | | | | | | |
| | 8 | 73 | 95.90 | 4 | 384.00 | | | | |
| 3306A2 | 8 | 72 | 44.50 | 26 | 315.00 | | | | |
| | 9 | 72 | 31.10 | 24 | 26.30 | | | | |
| | 10 | 72 | 73.50 | 28 | 125.00 | | | | |
| | 11 | 72 | 465.00 | 18 | 226.00 | | | | |
| | 12 | 72 | 461.00 | 9 | 818.00 | | | | |
| | 1 | 73 | 538.00 | 27 | 616.00 | | | | |
| | 2 | 73 | 574.00 | 10 | 358.00 | | | | |
| | 3 | 73 | 972.00 | | | | | | |
| | 4 | 73 | 1089.00 | 14 | 806.00 | 28 | 1081.00 | | |
| | 5 | 73 | 601.00 | 19 | 616.00 | | | | |
| | 6 | 73 | 271.00 | 23 | 139.00 | | | | |
| | 7 | 73 | 348.00 | | | | | | |
| | 8 | 73 | 98.30 | 4 | 394.00 | | | | |

TRIBUTARY FLOW INFORMATION FOR NEW HAMPSHIRE 7/9/74

LAKE CODE 3304 GLEN LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

| TRIBUTARY | MONTH | YEAR | MEAN FLOW | DAY | FLOW | DAY | FLOW | DAY | FLOW |
|---|---|---|---|---|---|---|---|---|---|
| 330691 | 8 | 72 | 0.13 | 26 | 0.92 | | | | |
| | 9 | 72 | 0.09 | 24 | 0.22 | | | | |
| | 10 | 72 | 0.22 | 28 | 0.37 | | | | |
| | 11 | 72 | 1.36 | 18 | 0.66 | | | | |
| | 12 | 72 | 1.34 | 9 | 2.39 | | | | |
| | 1 | 73 | 1.57 | 27 | 1.80 | | | | |
| | 2 | 73 | 1.69 | 10 | 1.04 | | | | |
| | 3 | 73 | 2.84 | 10 | 2.75 | 24 | 2.90 | | |
| | 4 | 73 | 3.20 | 14 | 2.48 | 28 | 3.20 | | |
| | 5 | 73 | 1.80 | 19 | 1.80 | | | | |
| | 6 | 73 | 0.79 | 23 | 0.41 | | | | |
| | 7 | 73 | 1.10 | | | | | | |
| | 8 | 73 | 0.29 | 4 | 1.15 | | | | |
| 3304C1 | 8 | 72 | 0.03 | 26 | 0.22 | | | | |
| | 9 | 72 | 0.02 | 9 | 0.02 | | | | |
| | 10 | 72 | 0.05 | 28 | 0.09 | | | | |
| | 11 | 72 | 0.32 | 14 | 0.16 | | | | |
| | 12 | 72 | 0.32 | 9 | 0.57 | | | | |
| | 1 | 73 | 0.37 | 27 | 0.43 | | | | |
| | 2 | 73 | 0.40 | 10 | 0.25 | | | | |
| | 3 | 73 | 0.68 | 10 | 0.65 | 24 | 0.69 | | |
| | 4 | 73 | 0.75 | 14 | 0.56 | 28 | 0.75 | | |
| | 5 | 73 | 0.42 | 19 | 0.43 | | | | |
| | 6 | 73 | 0.19 | 23 | 0.18 | | | | |
| | 7 | 73 | 0.24 | | | | | | |
| | 8 | 73 | 0.07 | 4 | 0.27 | | | | |
| 330601 | 8 | 72 | 0.05 | 26 | 0.36 | | | | |
| | 9 | 72 | 0.04 | 9 | 0.03 | | | | |
| | 10 | 72 | 0.08 | 28 | 0.14 | | | | |
| | 11 | 72 | 0.53 | 18 | 0.26 | | | | |
| | 12 | 72 | 0.52 | 9 | 0.93 | | | | |
| | 1 | 73 | 0.61 | 27 | 0.78 | | | | |
| | 2 | 73 | 0.65 | 10 | 0.41 | | | | |
| | 3 | 73 | 1.10 | 10 | 1.07 | | | | |
| | 4 | 73 | 1.20 | 14 | 0.92 | 28 | 1.20 | | |
| | 5 | 73 | 0.68 | 19 | 0.78 | | | | |
| | 6 | 73 | 0.31 | 23 | 0.16 | | | | |
| | 7 | 73 | 0.40 | | | | | | |
| | 8 | 73 | 0.11 | 4 | 0.45 | | | | |
| 3304E1 | 8 | 72 | 0.05 | 26 | 0.37 | | | | |
| | 9 | 72 | 0.04 | 9 | 0.04 | | | | |
| | 10 | 72 | 0.09 | 28 | 0.15 | | | | |
| | 11 | 72 | 0.55 | 18 | 0.27 | | | | |
| | 12 | 72 | 0.55 | 9 | 0.97 | | | | |
| | 1 | 73 | 0.64 | 27 | 0.73 | | | | |
| | 2 | 73 | 0.68 | 10 | 0.43 | | | | |
| | 3 | 73 | 1.16 | 10 | 1.12 | 24 | 1.18 | | |
| | 4 | 73 | 1.30 | 14 | 0.96 | 28 | 1.30 | | |
| | 5 | 73 | 0.71 | 19 | 0.73 | | | | |
| | 6 | 73 | 0.32 | 23 | 0.17 | | | | |
| | 7 | 73 | 0.41 | | | | | | |
| | 8 | 73 | 0.12 | 4 | 0.47 | | | | |

Reproduced from best available copy.



LAKE CODE 3305 [illegible] LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS

| TRIBUTARY | MONTH | YEAR | MEAN FLOW | DAY | FLOW | DAY | FLOW | DAY | FLOW |
|---|---|---|---|---|---|---|---|---|---|
| 330681 | 8 | 72 | 0.34 | 26 | 2.40 | | | | |
| | 9 | 72 | 0.24 | 24 | 0.57 | | | | |
| | 10 | 72 | 0.56 | 28 | 0.96 | | | | |
| | 11 | 72 | 3.53 | 18 | 1.72 | | | | |
| | 12 | 72 | 3.50 | 9 | 6.24 | | | | |
| | 1 | 73 | 4.10 | 27 | 4.70 | | | | |
| | 2 | 73 | 4.38 | 10 | 2.73 | | | | |
| | 3 | 73 | 7.41 | 10 | 7.18 | 24 | 7.56 | | |
| | 4 | 73 | 8.30 | 14 | 6.10 | 28 | 8.20 | | |
| | 5 | 73 | 4.60 | 19 | 4.70 | | | | |
| | 6 | 73 | 2.10 | 23 | 1.10 | | | | |
| | 7 | 73 | 2.70 | | | | | | |
| | 8 | 73 | 0.75 | 4 | 3.00 | | | | |
| 330677 | 8 | 72 | 0.50 | | | | | | |
| | 9 | 72 | 0.35 | | | | | | |
| | 10 | 72 | 0.83 | | | | | | |
| | 11 | 72 | 5.12 | | | | | | |
| | 12 | 72 | 5.15 | | | | | | |
| | 1 | 73 | 6.30 | | | | | | |
| | 2 | 73 | 6.42 | | | | | | |
| | 3 | 73 | 10.90 | | | | | | |
| | 4 | 73 | 12.20 | | | | | | |
| | 5 | 73 | 6.70 | | | | | | |
| | 6 | 73 | 3.00 | | | | | | |
| | 7 | 73 | 3.90 | | | | | | |
| | 8 | 73 | 1.10 | | | | | | |

# APPENDIX B

## PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 74/07/02

330601
43 01 00.0 071 34 18.0
GLENN LAKE
33 NEW HAMPSHIRE

11EPALES
3

2111202
0043 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00010 WATER TEMP CENT | 00300 DO MG/L | 00077 TRANSP SECCHI INCHES | 00094 CNDUCTVY FIELD MICROMHO | 00400 PH SU | 00410 T ALK CACO3 MG/L | 00630 NO2&NO3 N-TOTAL MG/L | 00610 NH3-N TOTAL MG/L | 00665 PHOS-TOT MG/L P | 00666 PHOS-DIS MG/L P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72/06/02 | 09 46 | 0000 | 16.6 | 8.6 | 56 | 40 | 6.30 | 10K* | 0.060 | 0.040 | 0.018 | 0.010 |
| | 09 46 | 0010 | 16.4 | 8.6 | | 40 | 6.30 | 10K | 0.050 | 0.040 | 0.015 | 0.010 |
| | 09 46 | 0020 | 16.3 | 8.6 | | 40 | 6.30 | 10K | 0.060 | 0.050 | 0.015 | 0.010 |
| | 09 46 | 0034 | 8.6 | 8.2 | | 40 | 6.15 | 10K | 0.060 | 0.110 | 0.010 | 0.008 |
| | 09 46 | 0055 | 7.1 | 2.6 | | 60 | 6.10 | 10K | 0.060 | 0.520 | 0.014 | 0.010 |
| 72/08/05 | 11 10 | 0000 | | | 66 | 65 | 6.60 | 10K | 0.050 | 0.060 | 0.036 | 0.018 |
| | 11 10 | 0004 | 21.6 | 6.8 | | 60 | 6.10 | 10K | 0.040 | 0.060 | 0.031 | 0.018 |
| | 11 10 | 0010 | 19.3 | 4.6 | | 65 | 6.00 | 10K | 0.080 | 0.100 | 0.022 | 0.015 |
| | 11 10 | 0015 | 16.9 | 4.8 | | 60 | 5.80 | 10K | 0.090 | 0.080 | 0.015 | 0.010 |
| | 11 10 | 0020 | 15.7 | 2.8 | | 65 | 5.70 | 10K | 0.220 | 0.150 | 0.023 | 0.014 |
| | 11 10 | 0025 | 14.9 | 1.6 | | 60 | 5.70 | 10K | 0.250 | 0.110 | 0.023 | 0.015 |
| | 11 10 | 0030 | 14.0 | 1.6 | | 60 | 5.70 | 10K | 0.250 | 0.100 | 0.024 | 0.016 |
| | 11 10 | 0035 | 11.0 | 0.2 | | 60 | 5.80 | 10 | 0.060 | 0.670 | 0.024 | 0.009 |
| | 11 10 | 0040 | 9.7 | 0.4 | | 65 | 5.80 | 10K | 0.060 | 0.630 | 0.026 | 0.009 |
| 72/10/04 | 15 35 | 0000 | | | 78 | 83 | 6.63 | 10 | 0.060 | 0.270 | 0.034 | 0.014 |
| | 15 35 | 0004 | 15.6 | | | 83 | 6.60 | 10K | 0.050 | 0.280 | 0.029 | 0.012 |
| | 15 35 | 0015 | 15.4 | 6.6 | | 82 | 6.55 | 10K | 0.050 | 0.260 | 0.024 | 0.015 |
| | 15 35 | 0020 | 15.3 | 6.2 | | 82 | 6.60 | 10K | 0.030 | 0.260 | 0.023 | 0.014 |
| | 15 35 | 0030 | 14.3 | 6.6 | | 82 | 6.50 | 10K | 0.060 | 0.280 | 0.049 | 0.020 |
| | 15 35 | 0035 | 11.9 | 0.2 | | 80 | 6.20 | 10K | 0.030 | 0.850 | 0.043 | 0.023 |
| | 15 35 | 0040 | 9.9 | 0.0 | | 97 | 6.30 | 10K | 0.030 | 2.340 | 0.077 | 0.062 |

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 32217 CHLRPHYL A UG/L |
|---|---|---|---|
| 72/06/02 | 09 46 | 0000 | 2.5J* |
| 72/08/05 | 11 10 | 0000 | 0.4J |
| 72/10/04 | 15 35 | 0000 | 6.4J |

J - Value known to be in error
K - Value is less than indicated

21<

STORET RETRIEVAL DATE 74/07/02

330602
43 01 00.0 071 35 18.0
GLENN LAKE
33 NEW HAMPSHIRE

11EPALES 2111202
3 0009 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00010 WATER TEMP CENT | 00300 DO MG/L | 00077 TRANSP SECCHI INCHES | 00094 CNDUCTVY FIELD MICROMHO | 00400 PH SU | 00410 T ALK CACO3 MG/L | 00630 NO2&NO3 N-TOTAL MG/L | 00610 NH3-N TOTAL MG/L | 00665 PHOS-TOT MG/L P | 00666 PHOS-DIS MG/L P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 72/06/02 | 10 23 | 0000 | 16.6 | 8.7 | 46 | 40 | 6.30 | 10K* | 0.050 | 0.040 | 0.02K | 0.015 |
| | 10 23 | 0009 | 16.4 | 9.0 | | 40 | 6.30 | 10K | 0.070 | 0.060 | 0.023 | 0.016 |
| 72/08/05 | 12 30 | 0000 | 21.1 | | 87 | 65 | 6.50 | 10K | 0.100 | 0.070 | 0.020 | 0.012 |
| | 12 30 | 0004 | 21.1 | 8.6 | | 65 | 6.50 | 10K | 0.100 | 0.090 | 0.026 | 0.015 |
| | 12 30 | 0008 | 20.4 | 8.4 | | 65 | 6.40 | 10K | 0.100 | 0.100 | 0.033 | 0.020 |
| 72/10/04 | 16 15 | 0000 | | | 60 | 82 | 6.75 | 10K | 0.070 | 0.270 | 0.037 | 0.019 |
| | 16 15 | 0004 | 16.6 | 7.8 | | 84 | 6.70 | 10K | 0.050 | 0.270 | 0.060 | 0.054 |
| | 16 15 | 0008 | 15.5 | 7.4 | | 84 | 6.70 | 12 | 0.070 | 0.380 | 0.105 | 0.077 |

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 32217 CHLRPHYL A UG/L |
|---|---|---|---|
| 72/06/02 | 10 23 | 0000 | 3.1J* |
| 72/08/05 | 12 30 | 0000 | 2.0J |
| 72/10/04 | 16 15 | 0000 | 8.3J |

J* Value known to be in error
K* Value known to be less than indicated

# APPENDIX C

## TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 74/07/02

3306A1 LS3306A1
43 01 00.0 071 36 00.0
PISCATAQUOG RIVER
33 7.5 GOFFSTOWN
I/GLEN LAKE
ST HWY 114 BRDG AT GOFFSTOWN
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/08/26 | 13 05 | | 0.075 | 0.340 | 0.066 | 0.012 | 0.012 |
| 72/09/24 | 11 00 | | 0.088 | 0.500 | 0.066 | 0.013 | 0.013 |
| 72/10/28 | 10 55 | | 0.042 | 0.650 | 0.058 | 0.005K* | 0.015 |
| 72/11/18 | 10 25 | | 0.071 | 0.300 | 0.081 | 0.005K | 0.020 |
| 72/12/09 | 11 00 | | 0.078 | 1.900 | 0.105 | 0.006 | 0.014 |
| 73/01/27 | 12 00 | | 0.088 | 0.220 | 0.015 | 0.005K | 0.005K |
| 73/03/24 | 11 15 | | 0.072 | 0.310 | 0.029 | 0.005K | 0.015 |
| 73/04/14 | 11 25 | | 0.042 | 0.150 | 0.007 | 0.005K | 0.010 |
| 73/04/28 | 11 00 | | 0.040 | 0.690 | 0.025 | 0.005K | 0.020 |
| 73/05/19 | 12 00 | | 0.020 | 0.230 | 0.011 | 0.005K | 0.015 |
| 73/06/23 | 12 20 | | 0.078 | 0.350 | 0.033 | 0.006 | 0.020 |
| 73/08/04 | 13 30 | | 0.061 | 0.420 | 0.360 | 0.007 | 0.025 |

K* Value known to be less than indicated

STORET RETRIEVAL DATE 74/07/02

3306A2 LS3306A2
43 01 00.0 071 33 00.0
PISCATAQUOG RIVER
33 7.5 MANCHESTER S
0/GLEN LAKE
1ST BRDG 1 MI BELOW DAM
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/08/26 | 11 20 | | 0.082 | 0.430 | 0.066 | 0.008 | 0.020 |
| 72/09/24 | 11 20 | | 0.084 | 0.650 | 0.064 | 0.013 | 0.036 |
| 72/10/28 | 09 45 | | 0.067 | 0.400 | 0.147 | 0.009 | 0.027 |
| 72/11/18 | 09 45 | | 0.067 | 0.330 | 0.078 | 0.007 | 0.023 |
| 73/01/27 | 11 00 | | 0.096 | 0.220 | 0.017 | 0.005K | 0.010 |
| 73/02/10 | 10 35 | | 0.100 | 0.250 | 0.025 | 0.005K | 0.015 |
| 73/04/14 | 13 10 | | 0.048 | 0.170 | 0.010 | 0.006 | 0.010 |
| 73/04/28 | 10 00 | | 0.048 | 0.390 | 0.029 | 0.005K | 0.020 |
| 73/05/19 | 10 50 | | 0.033 | 0.610 | 0.028 | 0.005K | 0.020 |
| 73/06/23 | 10 50 | | 0.050 | 0.360 | 0.029 | 0.006 | 0.025 |
| 73/08/04 | 11 10 | | 0.030 | 0.360 | 0.017 | 0.007 | 0.025 |

STORET RETRIEVAL DATE 74/07/02

330681 LS330681
43 01 00.0 071 3[illegible] 30.0
NO NAME
33 7.5 GOFFSTOWN
T/GLEN LAKE
0.3 MI E ST HWY 114 AND 13 JCT
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/08/26 | 14 00 | | 0.082 | 2.150 | 1.000 | 0.044 | 0.096 |
| 72/09/24 | 10 40 | | 0.225 | 1.900 | 0.550 | 0.033 | 0.080 |
| 72/10/28 | 10 45 | | 0.036 | 0.250 | 0.060 | 0.014 | 0.021 |
| 72/11/18 | 10 05 | | 0.150 | 0.460 | 0.092 | 0.005K | 0.018 |
| 72/12/09 | 10 00 | | 0.176 | 1.050 | 0.110 | 0.008 | 0.019 |
| 73/01/27 | 11 30 | | 0.180 | 0.210 | 0.016 | 0.008 | 0.025 |
| 73/02/10 | 11 05 | | 0.180 | 0.140 | 0.012 | 0.005K | 0.010 |
| 73/03/10 | | | 0.147 | 0.200 | 0.016 | 0.005K | 0.010 |
| 73/03/24 | 11 45 | | 0.084 | 0.145 | 0.018 | 0.005K | 0.010 |
| 73/04/14 | 11 50 | | 0.044 | 0.370 | 0.012 | 0.005K | 0.010 |
| 73/04/28 | 11 00 | | 0.031 | 0.350 | 0.019 | 0.005K | 0.030 |
| 73/05/19 | 11 40 | | 0.040 | 0.500 | 0.020 | 0.008 | 0.020 |
| 73/06/23 | 12 00 | | 0.075 | 0.337 | 0.016 | 0.006 | 0.090 |
| 73/08/04 | 14 30 | | 0.040 | 0.600 | 0.023 | 0.018 | 0.050 |

STORET RETRIEVAL DATE 74/07/02

3306C1 LS3306C1
43 01 00.0 071 35 30.0
NO NAME
33 7.5 GOFFSTOWN
T/GLEN LAKE
0.6 MI E ST HWY 114 AND 13 JCT
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/11/18 | 09 35 | | 0.036 | 0.230 | 0.042 | 0.008 | 0.012 |
| 72/12/09 | 09 45 | | 0.010K | 0.440 | 0.036 | 0.005K | 0.005K |
| 73/01/27 | 11 50 | | 0.010K | 0.130 | 0.010 | 0.005K | 0.005K |
| 73/02/10 | 11 00 | | 0.010K | 0.190 | 0.018 | 0.005K | 0.010 |
| 73/03/10 | | | 0.014 | 0.130 | 0.012 | 0.005K | 0.005K |
| 73/03/24 | 11 00 | | 0.010K | 0.630 | 0.042 | 0.005K | 0.005K |
| 73/04/14 | 12 05 | | 0.010K | 0.120 | 0.010 | 0.005K | 0.005K |
| 73/04/28 | 11 25 | | 0.016 | 0.500 | 0.048 | 0.005K | 0.010 |
| 73/05/19 | 11 25 | | 0.010K | 0.230 | 0.076 | 0.012 | 0.015 |
| 73/08/04 | 15 00 | | 0.010K | 0.320 | 0.044 | 0.031 | 0.057 |

STORET RETRIEVAL DATE 74/07/02

3306D1 LS3306D1
43 01 00.0 071 34 30.0
NO NAME
33 7.5 GOFFSTOWN
T/GLEN LAKE
1.3 MI E ST HWY 114 AND 13 JCT
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/11/18 | 09 20 | | 0.036 | 0.120 | 0.021 | 0.005K | 0.007 |
| 73/01/27 | 11 20 | | 0.052 | 0.750 | 0.060 | 0.010 | 0.015 |
| 73/02/10 | 10 50 | | 0.052 | 0.120 | 0.006 | 0.007 | 0.010 |
| 73/03/10 | | | 0.054 | 0.210 | 0.027 | 0.008 | 0.015 |
| 73/04/14 | 12 40 | | 0.010K | 0.170 | 0.006 | 0.007 | 0.010 |
| 73/04/28 | 10 30 | | 0.024 | 0.520 | 0.050 | 0.013 | 0.020 |
| 73/05/19 | 11 10 | | 0.011 | 0.180 | 0.016 | 0.012 | 0.022 |
| 73/06/23 | 10 55 | | 0.013 | 0.730 | 0.019 | 0.018 | 0.080 |
| 73/08/04 | 15 00 | | 0.034 | 0.270 | 0.029 | 0.024 | 0.025 |

STORET RETRIEVAL DATE 74/07/02

3306E1 LS3306E1
43 01 00.0 071 36 30.0
NO NAME
33 7.5 GOFFSTOWN
T/GLEN LAKE
0.2 MI W OF HIGH SCHOOL
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/12/09 | 12 00 | | 0.290 | | 0.096 | 0.006 | 0.006 |
| 73/01/27 | 12 15 | | 0.294 | 0.310 | 0.030 | 0.010 | 0.090 |
| 73/02/10 | 12 45 | | 0.360 | 0.100K | 0.010 | 0.005K | 0.005K |
| 73/03/10 | | | 0.273 | 0.110 | 0.032 | 0.011 | 0.011 |
| 73/03/24 | 11 30 | | 0.198 | 0.180 | 0.021 | 0.005K | 0.005K |
| 73/04/14 | 11 10 | | 0.131 | 0.670 | 0.038 | 0.005K | 0.010 |
| 73/04/28 | 13 50 | | 0.120 | 0.500 | 0.029 | 0.007 | 0.015 |
| 73/05/19 | 12 10 | | 0.110 | 0.150 | 0.019 | 0.005K | 0.010 |
| 73/08/04 | 13 00 | | 0.069 | 0.370 | 0.050 | 0.017 | 0.035 |

STORET RETRIEVAL DATE 74/07/02

3306F1 LS3306F1
43 01 00.0 071 34 30.0
DAM LITTLE BROOK
33 7.5 GOFFSTOWN
T/GLEN LAKE
BRDG 0.1 W JCT ST HWY 114-NORMAND RD
11EPALES 2111204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P |
|---|---|---|---|---|---|---|---|
| 72/08/26 | 13 30 | | 0.069 | 0.395 | 0.095 | 0.007 | 0.034 |
| 72/09/24 | 11 25 | | 0.112 | 0.300 | 0.083 | 0.005K | 0.016 |
| 72/10/28 | 11 25 | | 0.026 | 0.300 | 0.035 | 0.005K | 0.009 |
| 72/11/18 | 11 00 | | 0.049 | 0.260 | 0.040 | 0.005K | 0.006 |
| 72/12/09 | 13 00 | | 0.126 | 0.170 | 0.023 | 0.005K | 0.018 |
| 73/01/27 | 12 30 | | 0.147 | 0.220 | 0.021 | 0.005K | 0.005K |
| 73/02/10 | 13 00 | | 0.140 | 0.100K | 0.011 | 0.005K | 0.010 |
| 73/03/10 | | | 0.105 | 0.180 | 0.013 | 0.005K | 0.005K |
| 73/03/24 | 11 30 | | 0.096 | 0.740 | 0.032 | 0.005K | 0.010 |
| 73/04/14 | 10 48 | | 0.067 | 0.120 | 0.011 | 0.005K | 0.005K |
| 73/04/28 | 12 11 | | 0.046 | 1.100 | 0.060 | 0.009 | 0.010 |
| 73/05/19 | 12 40 | | 0.026 | 0.140 | 0.010 | 0.005K | 0.010 |
| 73/06/23 | 13 00 | | 0.040 | 0.350 | 0.042 | 0.005K | 0.020 |
| 73/08/04 | 12 30 | | 0.022 | 0.220 | 0.026 | 0.009 | 0.020 |

STORET RETRIEVAL DATE 74/07/02

330650 IP330650 P004000
43 01 00.0 071 35 30.0
GOFFSTOWN
33 7.5 GOFFSTOWN
D/GLEN LAKE
GLEN LAKE
11EPALES 2141204
4 0000 FEET DEPTH

| DATE FROM TO | TIME OF DAY | DEPTH FEET | 00630 NO2&NO3 N-TOTAL MG/L | 00625 TOT KJEL N MG/L | 00610 NH3-N TOTAL MG/L | 00671 PHOS-DIS ORTHO MG/L P | 00665 PHOS-TOT MG/L P | 50051 FLOW RATE INST MGD | 50053 CONDUIT FLOW-MGD MONTHLY |
|---|---|---|---|---|---|---|---|---|---|
| 72/11/29 | 11 00 | | | | | | | | |
| CP(T)- 72/11/29 | 16 00 | | 0.711 | 15.700 | 2.650 | 2.500 | | 0.520 | 0.480 |
| 72/12/27 | 11 00 | | | | | | | | |
| CP(T)- 72/12/27 | 16 00 | | 0.610 | 19.900 | 5.100 | 2.725 | 7.775 | 0.430 | 0.450 |
| 73/01/24 | 11 00 | | | | | | | | |
| CP(T)- 73/01/24 | 14 00 | | 0.860 | 10.500 | 3.400 | 1.400 | 3.150 | 0.680 | 0.520 |
| 73/02/26 | 11 00 | | | | | | | | |
| CP(T)- 73/02/26 | 16 00 | | 0.750 | 19.000 | 5.100 | 2.600 | 5.900 | 0.390 | 0.457 |
| 73/03/28 | 11 00 | | | | | | | | |
| CP(T)- 73/03/28 | 16 00 | | 0.650 | 9.700 | 4.000 | 1.900 | 4.800 | 0.518 | 0.562 |
| 73/04/25 | 11 00 | | | | | | | | |
| CP(T)- 73/04/25 | 16 00 | | 0.670 | 15.650 | 5.150 | 2.550 | 6.600 | 0.480 | 0.576 |
| 73/05/24 | 11 00 | | | | | | | | |
| CP(T)- 73/05/24 | 13 00 | | 0.700 | 15.000 | 4.800 | 2.300 | 5.200 | 0.535 | 0.468 |
| 73/06/29 | 11 00 | | | | | | | | |
| CP(T)- 73/06/29 | 16 30 | | 0.260 | 27.500 | 16.000 | 4.900 | 8.100 | 0.330 | 0.337 |
| 73/07/25 | 11 00 | | | | | | | | |
| CP(T)- 73/07/25 | 16 00 | | 0.300 | 31.500 | 14.700 | 5.500 | 13.500 | 0.260 | 0.348 |
| 73/08/22 | 11 00 | | | | | | | | |
| CP(T)- 73/08/22 | 16 00 | | 0.290 | 35.000 | 18.000 | 5.100 | 10.500 | 0.251 | 0.289 |
| 73/09/19 | 11 30 | | | | | | | | |
| CP(T)- 73/09/19 | 16 00 | | 0.430 | 30.500 | 15.400 | 6.180 | 12.000 | 0.275 | 0.248 |
| 73/10/24 | 11 00 | | | | | | | | |
| CP(T)- 73/10/24 | 16 00 | | 0.580 | 46.000 | 20.000 | 7.100 | 11.500 | 0.252 | 0.260 |